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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,115	02/10/2005	Wonmun Choi	ION-0229	2392
23353 7590 08/14/2007 RADER FISHMAN & GRAUER PLLC LION BUILDING 1233 20TH STREET N.W., SUITE 501 WASHINGTON, DC 20036			EXAMINER FEELY, MICHAEL J	
			ART UNIT 1712	PAPER NUMBER
			MAIL DATE 08/14/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/524,115

Applicant(s)

CHOI ET AL.

Examiner

Michael J. Feely

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 20070711, 20061221, 20050523.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Priority***

Claims 1-11 are pending.

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The language of claim 1 recites that the maleimide terminated rubber is “obtainable” by reacting a rubber having amino group and/or imino group on both ends of the molecule and a bismaleimide compound. The use of “obtainable” makes the scope unclear because the claimed material is not necessarily *obtained* by this reaction.

The following is suggested claim language: a maleimide terminated rubber having maleimide structure on both ends of the rubber molecule, wherein said maleimide terminated rubber is the reaction product of a rubber having amino group and/or imino group on both ends of the rubber molecule and a bismaleimide compound.

***Claim Rejections - 35 USC § 101/112***

3. 35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 6-11 provide for the use of the instantly claimed curable composition, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 6-11 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

The following is suggested claim language: a composite molded article *comprising* the curable composition of claim #; a prepreg *comprising* the curable composition of claim 5.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Kovacic (US Pat. No. 2,818,405).

Regarding claim 1, Kovacic discloses: (1) a maleimide terminated rubber having maleimide structure on both ends of the rubber molecule (columns 1-4), wherein said maleimide

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terminated rubber is the reaction product of a rubber having amino group and/or imino group on both ends of the rubber molecule and a bismaleimide compound (column 2, lines 13-42).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Domeier (US Pat. No. 5,364,700) in view of Kovacic (US Pat. No. 2,818,405).

Regarding claims 2-11, Domeier disclose: (2) a curable composition (column 1, line 65 through column 2, line 31) comprising *a rubber modified bismaleimide resin* (column 1, line 65 through column 2, line 26; column 3, lines 31-53) and a resin and/or a rubber other than *the rubber modified bismaleimide resin* (column 4, line 30 through column 8, line 55); (3) further comprising a curing agent having a functional group capable of reacting with the maleimide structure (column 8, line 56 through column 9, line 17); (4) wherein the functional group is at least one member selected from a group consisting of amino group, imino group, thiol group, and diene structure (column 8, line 56 through column 9, line 17); (5) wherein the resin is epoxy resin (column 4, line 30 through column 8, line 55), and the functional group is at least one member selected from a group consisting of amino group, imino group, and thiol group (column 8, line 56 through column 9, line 17); (6-10) a composite molded article comprising the curable

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composition of claims 1-5 (column 10, lines 30-48); and *(II)* a prepreg comprising the curable composition of claim 5 (column 10, lines 30-48).

The *rubber modified bismaleimide resin* of Domeier is a physical blend of bismaleimide resin and a rubber modifier, such as amino-terminated butadiene/acrylonitrile. This blend is used together with an epoxy resin and a curing agent to impregnate structural fibers. This is different from the instant invention because the prior art physical blend is not reacted to form a modifier having an *integrated* chemical structure. In light of this, the teachings of Kovacic disclose this *integrated* (reacted) chemical structure (*see MPEP 2144.04 V. B.*), wherein this material has multiple uses, including forming adhesive bonds between a wide variety of *plastics*, elastomers, *fabrics*, metals, wood, leather, ceramics, and the like (*see column 6, lines 7-19*). One of ordinary skill in the art would have recognized that this adhesive characteristic would have been beneficial in the manufacture of prepreg composites, wherein the impregnated *resin* bonds to the *fibers* to form the composite material.

Therefore, it would have been obvious to one of ordinary skill in the art the time of the invention to use the instantly claimed maleimide terminated rubber, as taught by Kovacic, in the composition of Domeier because Kovacic disclose the chemically integrated version of the Domeier's rubber modified bismaleimide resin, wherein this chemically integrated material has multiple uses, including forming adhesive bonds between a wide variety of *plastics*, elastomers, *fabrics*, metals, wood, leather, ceramics, and the like. One of ordinary skill in the art would have recognized that this adhesive characteristic would have been beneficial in the manufacture of prepreg composites, wherein the impregnated *resin* bonds to the *fibers* to form the composite material.

*Conclusion*

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Recker et al. (US Pat. No. 5,532,296) disclose a similar bismaleimide resin system. Furthermore, WO 94/22680 was cited as an "A-reference" in the international search report of the international application of the instant invention.

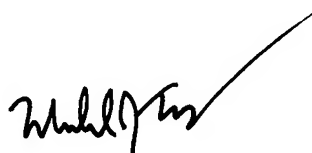
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*Communication*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael J. Feely  
Primary Examiner  
Art Unit 1712

August 6, 2007

**MICHAEL FEELY**  
**PRIMARY EXAMINER**